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Sexual Health and Function in Later Life: A Population-Based Study of 606 Older Adults with a Partner

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Background: *Sexual health and function is an important yet understudied aspect of overall health and well-being in older adults. There are limited data on the relative strength of associations between various aspects of sexual health with the physical, emotional, and cognitive function in older adults. Additionally, there is little information on how these associations differ by age and sex. Methods:* *In this Successful Aging Evaluation (SAGE) study, 606 community-dwelling adults in San Diego County, aged 50–99 years and who had a partner, were included in the analysis. Evaluations included a phone-based cognitive screening followed by a comprehensive mail-in survey including rating scales of sexual health, depression, anxiety, and physical function. Results:* *The mean age of the sample was 75.2 years. Over 80% of respondents had engaged in sexual activity in the past year, over 70% engaged in sexual activity weekly or more than once a week, and over 60% were somewhat or very satisfied with their sex lives. No sex differences were evident on dimensions of sexual health except for a higher rate of rejection of sexual overtures by women. Depressive symptoms were negatively associated with all assessed aspects of sexual health, even after adjusting for age, physical functioning, anxiety, cognitive ability, or perceived stress in both men and women. Conclusions:* *In this population-based study older men and women who had a partner reported frequent engagement in and satisfaction with sexual activity. Depressive symptoms were broadly associated with worse sexual health, more so than physical function, anxiety or stress, or age itself.* (Am J Geriatr Psychiatry 2015; 23:227–233)

Key Words: Aging, sexuality depression, anxiety, physical functioning, cognition

Despite the rapid growth of the older population and aggressive marketing of products aimed at sexual health in later life, sexuality in older adulthood has received limited research attention.^{1,2} Sexual health

covers many broad characteristics including relationships, behavior, function or dysfunction, attitudes, and satisfaction. Contrary to persistent stereotypes, recent studies have indicated that many older men and

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women remain sexually active, experience sexual desire, and regard sexual activity as an important aspect of their lives.^{1,3–6} Moreover, multiple aspects of sexual health in older adults are positively associated with self-rated health and indicators of physical function.^{6–8} In fact, in our earlier investigation of older women participating in the Women's Health Initiative Study (San Diego site), we found that activity and satisfaction with sexuality were associated with higher self-perceived successful aging and quality of life.⁹ Most of the research on sexuality in older adults focuses on sexual dysfunction and physical illnesses such as diabetes, cancer, and other chronic conditions.^{2,8} Few studies have compared the associations of sexuality with different facets of health—physical, emotional, and cognitive—between older men and women.

Among emotional constructs, depressive symptoms have been reported to be a risk factor for reduced sexual activity and satisfaction as well as sexual dysfunction,¹⁰ particularly erectile dysfunction.^{2,11,12} In fact, individuals with clinically significant depressive symptoms are two times more likely to develop erectile dysfunction.^{5,11,13} Thus, depression represents a potentially modifiable contributor to problems in sexual health.^{13–15}

There may be differences across men and women with regard to the strength of association between sexual health and emotional and cognitive health. Kashdan et al.¹⁴ found that in older adults who reported social anxiety, women had a lower rate of sexual activity with their partners, whereas men were more likely to engage in sexual activity. Furthermore, women who had more depressive symptoms felt less connected with their partners during sexual activity, compared with men who felt more connected with their partners. In another study, better physical health and an active sexual history were general predictors of greater sexual activity in men, whereas sexual desire and a healthy partner were predictive of greater sexual activity in women.⁶ According to Thompson et al.,⁹ sexual satisfaction in women was not associated with age, despite markedly lower rates of sexual activity. It is unclear if this divergence is also evident among men.

Thus, several aspects of sexual health in older adults remain open to question, particularly whether relative associations of emotional and cognitive health impact aspects of sexual health, and how these associations differ between men and women. We hypothesized that depressive symptoms, anxiety symptoms, perceived

stress, and cognitive ability would be negatively associated with all aspects of sexual health, after adjusting for physical function and age. We explored the relative impact of these associations in multivariate models, gender differences on Quality of Sexual Life Questionnaire (QSLQ) responses, and interactions between sex and predictor.

METHODS

Study Design and Recruitment

In the current study, we used baseline data on sexual health from the Successful Aging Evaluation (SAGE) study. The SAGE study used a structured multi-cohort design to recruit 1,006 community-dwelling adults aged 50–99 years who resided in San Diego County, with an over-sampling of people over age 80 year. Details of the methods of this study are described elsewhere.¹⁶ Briefly, inclusion criteria were: 1) age 50–99 years, 2) having a (landline) telephone at home, 3) physical and cognitive ability sufficient to participate in a telephone interview and to complete a paper and pencil mail survey, 4) informed consent for study participation, and 5) English fluency. Exclusion criteria were: 1) residence in a nursing home, or requiring daily skilled nursing care, 2) self-reported prior diagnosis of dementia, and 3) terminal illness, or requiring hospice care. The study was approved by the UCSD Human Research Protections Program and used a structured multi-cohort design to maximize power to detect associations across age and sex. As a result, the sample was stratified by sex with an ethnic distribution comparable to that in San Diego County. Participants were recruited using list-assisted random digit dialing procedures and telephone calling. For the present study, we focused on their responses to the QSLQ, which addresses activity, dysfunction, desire, satisfaction, and other aspects of sexual health.¹⁷ Analyses were restricted to participants who reported that they had a current partner ($N = 606$, thus excluding 400 participants without a partner).

Assessment: Telephone Interview for Cognitive Ability

During a structured phone interview, participants were administered the 12-item modified version of the Telephone Interview for Cognitive Status or

TABLE 1. Sample Characteristics

	Men N = 405	Women N = 201	χ^2 or T (df)	P Value
Age, Mean (SD), years	76.2 (12.1)	72.84 (11.9)	-3.3 (604)	0.001
Ethnicity, N (%) ^a			6.1 (3)	0.104
Caucasian	317 (78.7)	153 (76.1)		
African American	0	7 (3.5)		
Hispanic	54 (13.4)	26 (12.9)		
Asian	28 (6.9)	14 (7.0)		
Other	4 (1.0)	1 (.5)		
Education, N (%)			23.9 (3)	<0.001
Less than high school	13 (3.2)	13 (6.5)		
High school or GED	51 (12.6)	43 (21.5)		
Some college	112 (27.9)	72 (36.0)		
College graduate	225 (56.1)	72 (36.0)		
Marital Status, N (%)			66.2 (4)	<0.001
Never married	1 (.2)	3 (1.5)		
Divorced/separated	12 (3.0)	26 (13.0)		
Widowed	32 (7.9)	39 (19.5)		
Presently married	350 (86.8)	116 (58.0)		
Living in a marriage-like relationship or other	8 (2.0)	15 (7.5)		
PSS Total Score, Mean (SD)	11.6 (5.0)	13.0 (5.8)	3.0 (573)	0.002
PHQ-9 Severity Score, Mean (SD)	2.2 (3.1)	2.8 (4.0)	2.1 (569)	0.034
TICS Total Score, Mean (SD)	32.7 (5.0)	33.7 (5.5)	2.2 (604)	0.028
BSI-A, Mean (SD)	1.6 (2.5)	2.2 (3.0)	2.3 (586)	0.018
SF-36 Physical Composite Scale, Mean (SD)	45.5 (10.3)	45.6 (10.0)	0.1 (570)	0.907

Notes: PSS: Perceived Stress Scale; PHQ-9: 9-item Personal Health Questionnaire; BSI-A: Brief Symptom Inventory-Anxiety Subscale; TICS: Interview for Cognitive Status; SF-36: Short Form Health Survey.

^aEthnic categories were collapsed for African American and other categories in χ^2 analyses but are displayed in the table.

TICS-m.¹⁸ This test has proved to be an effective screening tool for cognitive impairment.^{18,19}

Assessment: Mail-in SAGE Survey

The survey questionnaire included detailed demographics, a number of rating scales, and many other measures. We are only looking at a select few for this report, however.

Sexual health and function. The QSLQ is a 7-item self-report survey covering multiple dimensions of sexual health and function. The questions cover 1) problems with the relationship, 2) discussing sex, 3) frequency of activity, 4) satisfaction, 5) desire, 6) rejection of sexual overtures, and 7) dysfunction.¹⁶ Questions are rated on 5-point Likert scales that are anchored

specifically to each question. The internal consistency was low most likely because the measure covers broad aspects of sexual health. As such, we did not attempt to create a summary score from the QSLQ—rather, we examined responses to the individual questions.

Emotional health.

Depression. Severity of depressive symptoms was evaluated with the Patient Health Questionnaire 9-Item (PHQ-9).²⁰

Anxiety. The anxiety subscale of the Brief Symptom Inventory (BSI) is a 6-item self-report measured severity of current anxiety symptoms.²¹

Perceived stress scale. This widely used scale measures the degree to which one appraises certain situations as stressful.²²

Physical functioning. We used the Physical Functioning Composite of the Medical Outcomes Study 36-item Short Form (MOS SF-36).²³

Statistical Analysis

We examined the data for outliers, missing values, and normality. We computed summary statistics for demographics and differences in QSLQ items compared between men and women using χ^2 tests. We then examined univariate associations between QSLQ items and age, along with the other study variables by Pearson correlations. Multivariate regression analyses were conducted to identify the variables with the greatest strength of association with each of the QSLQ items. Physical functioning (SF-36 Physical Functioning Composite) was included in the first step for each regression. Furthermore, we selected significant variables for each regression using the LASSO procedure.²⁴ All independent variables were first standardized to have zero mean and unit variance. The LASSO penalty parameter was selected via leave-one-out cross validation for each of the seven regressions separately. In these regressions, we also included age \times predictor and sex \times predictor interactions. We set the p value at 0.001 to mitigate against the risk of Type 1 error.

RESULTS

Sample Characteristics

Although the SAGE study was stratified equally by sex, when older adults without a partner were excluded, the resultant sample included twice as many men

TABLE 2. Quality of Sexual Life Questionnaire (QSLQ) Items Compared Across Men and Women and Correlated with Age

QSLQ ITEM	Men (N = 405) N (%)	Women (N = 201) N (%)	X ²	p Value	Age Correlation	p Value
QSLQ 1 (Getting along with partner)						
Very bad	10 (2.7)	4 (2.6)	2.5	0.651	0.058	0.190
Bad	3 (0.8)	2 (1.3)				
Mediocre	32 (8.6)	14 (9.3)				
Good	120 (32.4)	58 (38.4)				
Very good	205 (55.4)	73 (48.3)				
QSLQ 2 (Frequency discuss sex)						
Not at all	82 (22.0)	35 (24.1)	3.9	0.423	-0.205	<0.001
Seldom	111 (29.8)	35 (24.1)				
Sometimes	105 (28.2)	50 (34.5)				
Usually	57 (15.3)	21 (14.5)				
Very good	18 (4.8)	4 (2.8)				
QSLQ 3 (Sexual desire)						
No desire	32 (8.6)	20 (13.5)	10.0	0.040	-0.282	<0.001
Very low desire	66 (17.8)	29 (19.6)				
Low desire	62 (16.7)	26 (17.6)				
Mediocre desire	102 (27.5)	48 (32.4)				
High desire	109 (29.4)	25 (16.9)				
QSLQ 4 (Sexual satisfaction)						
Do not have sex	84 (22.8)	41 (27.9)	2.9	0.568	-0.069	0.116
Very unsatisfied	18 (4.9)	4 (2.7)				
Not so satisfied	29 (7.9)	12 (8.2)				
Sometimes satisfied	88 (23.8)	37 (25.2)				
Very satisfied	150 (40.7)	53 (36.1)				
QSLQ 5 (Reject sexual overtures)						
Always	6 (1.6)	4 (2.9)	39.2	<0.001	0.146	<0.001
Very often	5 (1.4)	2 (1.4)				
Sometimes	32 (8.7)	33 (23.7)				
Rarely	86 (23.4)	50 (36.0)				
Never	238 (64.9)	50 (36.0)				
QSLQ 6 (Frequency of activity)						
Weekly or more than once a week	153 (41.0)	51 (35.4)	2.7	0.435	-0.384	<0.001
1-3 times a month	70 (18.8)	34 (23.6)				
< once a month	73 (19.6)	25 (17.4)				
Never in past year	77 (20.6)	34 (23.6)				
QSLQ 7 (Problems with sexual arousal or performance)						
Often	60 (16.2)	22 (15.4)	5.1	0.277	-0.126	0.019
Occasionally	70 (18.9)	23 (16.1)				
Seldom	55 (14.8)	29 (20.3)				
Never	69 (18.6)	18 (12.6)				
Not applicable	117 (31.5)	51 (35.7)				

Note: df = 4 for all items except for Item 6 where df = 3.

(N = 405) as women (N = 201). Approximately three-fourths of the sample was White. As seen in Table 1, the average age was slightly higher for men (76.2 years [SD: 12.1]) compared with women (72.8 years [SD: 11.9]). Men were also more likely to have attained a college degree and to be currently married. With the exception of Perceived Stress Scale scores (with men having significantly lower perceived stress compared with women), there were no significant differences between men and women at the α level of 0.001 on the PHQ-9, BSI, TICS, or SF-36 Physical Functioning

Composite. Compared with normative values, the scores on these scales indicated that the sample was, on average, experiencing minimal levels of stress, anxiety, and depression, and not exhibiting clinically significant cognitive impairment.

QSLQ Responses

Forty-one percent of men and 35% of women endorsed engaging in sexual activity at least once per week, and only 21% of men and 24% of women had

not engaged in sexual activity in the past year (Table 2). Moreover, 41% of men and 36% of women reported that they were “Very Satisfied” with their current sex life. Comparisons between men and women revealed that only one item on the QSLQ reached statistical significance: women reported higher frequency of rejection of sexual overtures. In contrast to a relative lack of sex differences, a greater number of age effects were observed. Five of the seven items were significantly associated with age: Older age was positively associated with lower frequency of activity, greater dysfunction, reduced desire, and lower likelihood of discussing sex with a partner, but was negatively associated with rejecting sexual overtures. Age, however, was not associated with sexual satisfaction.

Univariate Associations Between QSLQ Items and Emotional and Cognitive Health Indicators

Correlations between emotional and cognitive health scales indicated significant associations between all seven QSLQ items with depressive symptom severity (PHQ-9 scores) and perceived stress (PSS scores), each in the direction of more symptoms and stress being associated with worse sexual health. In contrast, three of the seven items were associated with anxiety (BSI-A scores): getting along with partner, satisfaction, and rejection of sexual overtures; and two of the QSLQ items with cognitive ability (TICS score): frequency and desire. Finally, physical functioning (SF-36 Physical Composite) was positively associated with four QSLQ items: discussing sex, frequency, desire, and satisfaction.

Multivariate Associations Between QSLQ Items and Emotional and Cognitive Functions

We conducted three separate multivariate models for each of the QSLQ items: a main-effects model, a sex interaction model, and an age \times sex interaction model. In each regression, we entered physical functioning in the first block and TICS, PHQ-9, BSI-A, and PSS scores in the second block. By use of the LASSO technique for variable selection, we found that depression emerged as the only significant predictor for each of the five QSLQ items: desire, satisfaction, frequency, getting along with partner, and discussing sex with partner (r^2 ranged from 0.141 for sexual problems to 0.292 for desire). Anxiety,

perceived stress, and cognitive ability were not associated with a significant main effect after the LASSO procedure. Sex interactions were not evident, nor were age \times sex interactions.

DISCUSSION

This population-based study of older adults with partners identified several potentially important aspects of sexual health in older adults. The modal older adult in our study (mean age of 75 years) reported engaging in regular (at least monthly) sexual activity and was very satisfied with their sex life. There were no differences between men and women in self-reported quality of sexual life except for greater frequency of rejection of sexual overtures by women. In contrast, age (across the range 50 to 99 years) was negatively associated with frequency and desire, and positively associated with dysfunction. Yet, as in our prior study that was restricted to women, satisfaction was not associated with older age.⁹ More severe depressive symptoms emerged as the single strongest predictor of sexual health, even after adjusting for age, sex, and physical function, and considered in the context of anxiety, perceived stress, and cognitive ability. Depressive symptoms, even in the subsyndromal range, adversely impacted activity, frequency, satisfaction, relationship quality, and discussion about sex; depressive symptom severity accounted for approximately 14%–29% of the variation in sexual health indicators. As such, this study highlights that sexual activity and satisfaction are normative aspects of life in older adults, and that successful treatment of depression, even at subsyndromal levels, might produce a positive impact on multiple aspects of sexual health.

This study had several strengths. The sample was selected from a large, geographically and ethnically diverse metropolitan area, using random digit dialing, and was stratified by both age and sex. Thus the design was well suited to examine age and sex effects in a generalizable sample of adults over age 50 years with partners. Standardized instruments were used to assess sexual function and emotional and cognitive health indicators. There are also a number of limitations that deserve to be noted. These data are from a single geographical region and from fluent

English speakers, and may not generalize to overall U.S. population. The TICS provides only a broad indicator of cognitive function, and it is possible that a more comprehensive neuropsychological battery would have detected stronger associations between cognition and sexual health. The study was cross-sectional and the direction of the association between sexual health and emotional and cognitive variables is unknown. It is conceivable that diminished sexual function may increase depressive symptoms or vice versa, which is a question we hope to address with forthcoming longitudinal data. We lacked systematic data on the use of antidepressants or other medications that may produce sexual side effects, as such it is possible that the associations between depression (or other emotional variables) and sexual health were due to the side effects produced by medications for affective symptoms (rather than the symptoms themselves). Finally, these findings were restricted to older adults with a partner, and thus we cannot comment on the influence of study variables on sexual health in persons without a partner.

Despite these limitations, our study confirmed that community-dwelling older adults who have partners report frequent engagement in sexual activity, are satisfied with their sex lives, and experience desire for sexual activity. Between ages 50 and 99 years, there were marked age effects for sexual activity, desire, and function, all of which were in the negative direction for both men and women. Despite these age-associated reductions, there was not a commensurate decrease in satisfaction in either sex. One interpretation might be that older adults' satisfaction with sexual health may be an indicator of acceptance of reduced frequency of sexual activity in their lives.

A downside of this possibility is that older adults may consider these declines as normative even when they are secondary to treatable or modifiable risk factors. For instance, greater than 30% of men and women reported experiencing problems with sexual performance at least occasionally. It is unknown how many of the participants in this study had addressed these problems with their healthcare providers.

In multivariate models, depression was associated with a substantial and pervasive negative impact on sexual health in both men and women and across the age range of 50–99 years, even after adjusting for physical functioning. Anxiety and perceived stress were also associated with sexual function in univariate analyses, but these effects were more restricted and diminished when compared with depression. It is unclear why depressive symptoms, rather than anxiety or stress, had such a deleterious impact on sexual health. Whatever the cause, it seems clear that older adults who report depressive symptoms should be screened for problems in sexual health. It remains unclear if effective treatment for depression will improve aspects of sexual health (notwithstanding potential side-effects). However, given the body of work, including these data, knowledge of the potential benefits to sexual health from effective depression treatment may increase motivation to engage in depression care.

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